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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/522,262 | 09/21/2005 | Iiro Hietanen | 800186US | 5683 |

7590
Ryan Mason & Lewis
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Locust Valley, NY 11560

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| EXAMINER |
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SHINGLETON, MICHAEL B

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| ART UNIT | PAPER NUMBER |
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2815

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| MAIL DATE | DELIVERY MODE |
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01/28/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--|---------------------------------------|--|
| Office Action Summary | Application No. 10/522,262 | Applicant(s) HIETANEN, IIRO | |
| | Examiner Michael B. Shingleton | Art Unit 2815 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 39-51, 73 and 74 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 39-51, 73 and 74 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

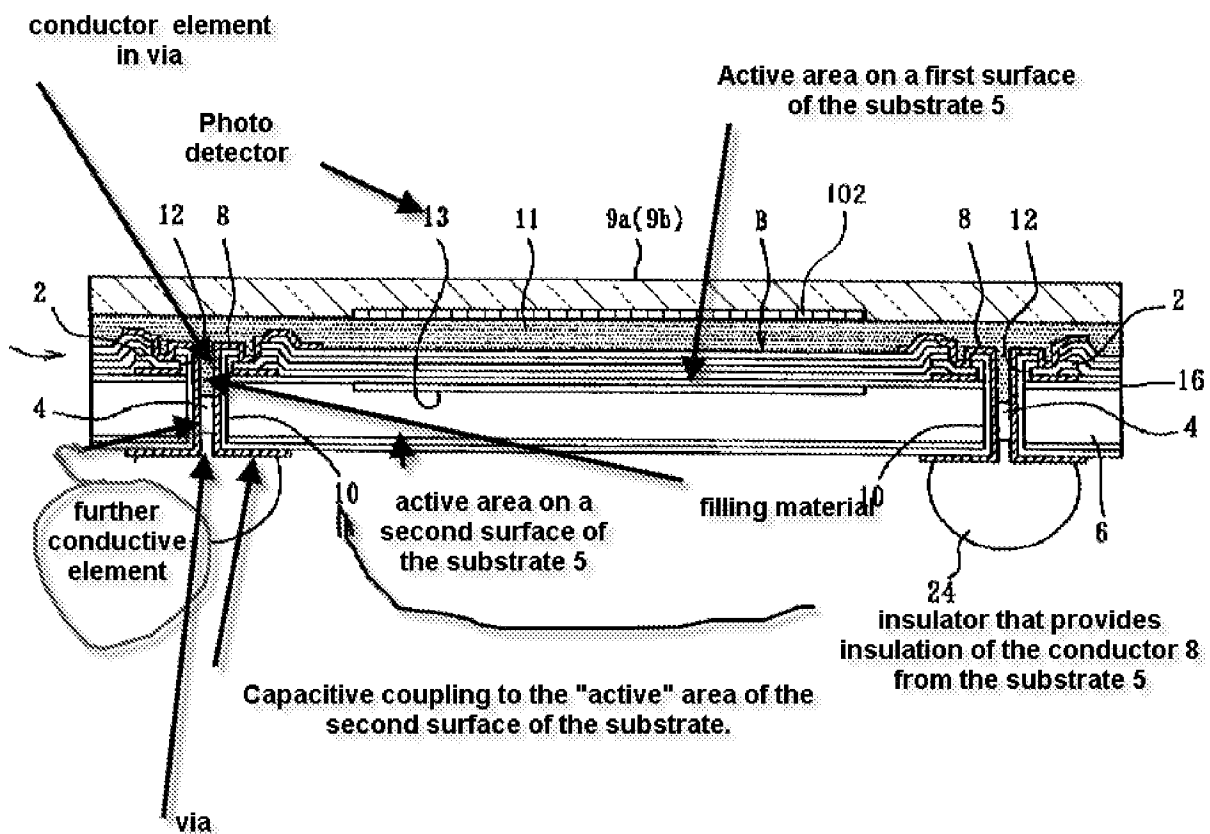
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|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5-01-2009; 7-25-2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 39-51, 73 and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wada US 6,703,689 (Wada) in view of Huang et al. US 7,052,939 (Huang).



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At least Figure 1 and the relevant text of Wada discloses a substrate 5 that includes a plurality of photodetectors each having an active area on a first surface and a further active area on a second surface of the substrate (See the illustration of Figure 1 above.). The device of Wada has a plurality of vias formed between the first surface and the second surface of the substrate. The electrical conductor 8/12 is electrically isolated from the substrate 5 via the insulator 10. The material 11 is a "filling material" that does lie "within at least one of the conductive vias".

As recited in the previous office action the use of polysilicon as a conductive material is well known. As evidence the examiner cites the Huang reference. Here conductive materials include polysilicon or other "interconnect" material that can be formed in the via 28 therein.

As to the use of photo-diodes as the photo detectors, Wada appears to be silent on the type of photo detector employed however photo-diodes are one extremely well know art recognized equivalent form of photodetector. Some have a pin structure.

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a photo-diode form of photo detector in Wada as such are well known art recognized equivalents.

As to the arrangement of the anodes and the cathodes, i.e. which is on top and which is on the bottom this is merely an obvious design criteria (rearrangement of parts) that does not present a patentable distinction over the prior art.

New claim 73 recites that the filling material is that of a "photoresist". Of the materials recited for the filling material 11 these include resin or glass or "the like" (See column 6, around line 20). The term "photoresist" implies an intended use but never-the-less the materials recited by Wada can be used as a photoresist and thus are seen as providing for this limitation.

New claim 74 recites a guard ring that is provided for each photodetector. Guard rings are common place in the art to provide isolation between elements and thus the word guard. As this is common place in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a guard ring for each photo detector in the combination made obvious above so as to provide for isolation between elements.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed used as the interconnect material polysilicon as Huang teaches that polysilicon is a well-know art-recognized equivalent interconnect material.

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Claim 48 recites what can be considered at intended use. Here the photo detectors are recited as being “of at least one of the following: an imaging system, a medical imaging system, and a computed tomography system”. The device made obvious above is fully capable as being used in any one and in fact in everyone of these systems.

Applicant's arguments with respect to claims of record have been considered but are moot in view of the new ground(s) of rejection. However the examiner has provided a reference in response to applicant's challenge to the fact of polysilicon being well known for use in vias. While the examiner believes that it is clearly apparent from the Figures of Wada the illustration of Figure 1 of Wada also has been provided not to change the previous rejection, but to make it more clear as to what can be the further conductive element from the side of the first surface of the substrate to the second of the second surface within the at least one conductive via.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael B. Shingleton whose telephone number is (571) 272-1770.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker, can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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A handwritten signature in cursive script, reading "Michael B. Shingleton". The signature is written in a dark, slightly textured ink.

MBS
September 11, 2008

/Michael B. Shingleton/
Michael B Shingleton
Primary Examiner
Group Art Unit 2815